

Electrotechnical components



Strip Wound Cores



Introduction

Strip wound cores for transformers and chokes

Iskra, d. d. is one of the major Slovenian producers of various types of strip wound transformer cores made of oriented silicon iron steel strip. With our own production line and highly trained personnel, we fulfill the requirements of local and foreign markets.

To produce high-quality cores for transformer and chokes, we use an oriented silicon iron steel strip that contains 3% silicon. We mainly produce cores from M103-27P and M089-27N materials. The strip thickness is 0.27 mm and can be used up to 200 Hz. The grain oriented silicon iron steel strip Trafoperm N2 with thickness 0.1 mm cover the frequency range from 200 Hz to 2 kHz.

For the production of cores, we select our GOESS suppliers and ensure diligent control of production and the quality of the entire working process. All cores are measured 100% by a computer controlled measurement system MDK1000A. The test reports are available for our customers in PDF form.

Additional services

We also offer our customers cores insulated with a polyester film (Mylar foil) or cores coated with epoxy resin. Both insulations are provided with UL file numbers.

Development of cores

Our engineers use their knowledge and experience to offer the professional advice you need for the planning and selection of cores to meet your requirements.

Types of cores

- Rectangular cores
- Rectangular cut cores
- Oval cores
- Oval cores with air gap
- Standard cut cores: CM, CE, CG, C3U and C cores
- Special cores according to customer demand

All types can be produced according to customer demand in various dimensions and shapes .

The standard cores are available in quality »A« (unground) or quality »C« (ground). The codes in the table for standard cores are intended for quality »A«.

Introduction

Typical electromagnetic features of blank cores

Material	Thickness mm	Frequency Hz	Field strenght Hef (A/cm)	Minimum density B(T)
M089-27N	0.27	50	0.3	1.4
M103-27P	0.27	50	0.3	1.6

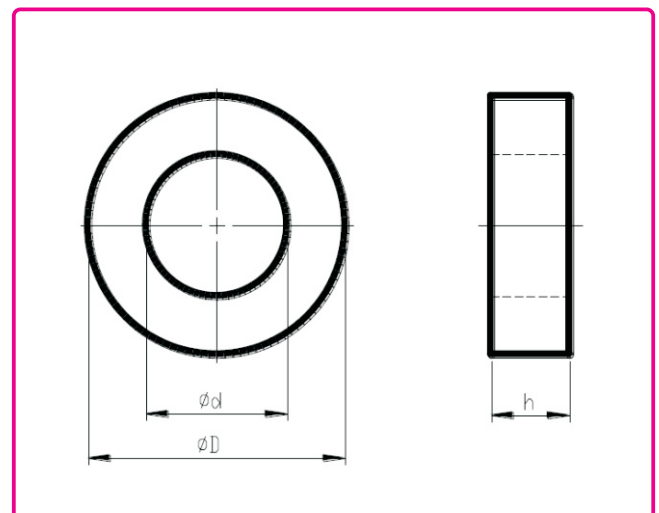
Dimensions and tolerances

External diameter - D mm	Tolerance mm	Internal diameter - d mm	Tolerance mm	Height - h mm	Tolerance mm
≤ 10	±0.4	≤ 10	±0.3	≤ 10	+0.3
≤ 25	±0.6	≤ 25	±0.5	≤ 25	+0.4
≤ 50	±1.0	≤ 50	±0.5	≤ 50	+0.6
≤ 80	±1.25	≤ 80	±0.75	≤ 80	+0.8
≤ 100	±1.5	≤ 100	±1.0	≤ 100	+1.0
≤ 160	±2.0	≤ 160	±1.3	≤ 160	+1.5
≤ 200	±2.5	≤ 200	±1.5	≤ 200	+1.5
≤ 250	±3.0	≤ 250	±2.0	≤ 250	+2.0
≤ 300	±3.5	≤ 250	±2.5	≤ 300	+2.5

Remarks

- Toroidal cores are mostly used for power and instrument transformers, chokes and rotary transformers.
- We offer cores with various dimensions :external diameter from 18 to 300 mm ,internal diameter from 13 to 250 mm ,height from 5 to 105 mm .
- Cores are produced in accordance with the DIN 42311 standard customer request.
- In order to achieve the best quality of cores ,the $D/d=1.25$ to 2 ratio must be established .The stacking factor η is the proportion between the effective magnetized average and geometrical average of the core .

Dimensions



Equations

The universal transformer equation

$$V_{RMS} = \frac{2 \cdot f \cdot N \cdot A_{FE} \cdot B_{PEAK}}{\sqrt{2}} = 4,44 \cdot f \cdot N \cdot A_{FE} \cdot B_{PEAK}$$

$$V_{RMS} = \frac{V}{\sqrt{2}}$$

V_{RMS} - root mean square voltage

f - frequency

N - number of turns

A_{FE} - core cross section area in m²

B_{PEAK} - peak magnetic flux density in T (tesla, Vs/m²)

Hysteresis losses

$$W_H = B_{MAX}^{1.6} \quad \text{energy of hysteresis losses}$$

$$P_H = W_H \cdot f = k \cdot B_{MAX}^{1.6}$$

P_H - hysteresis losses

f - frequency

k - hysteresis coefficient

Empirical exponent varied from about 1.4 – 1.8 but is often given 1.6 for silicon iron core.

Calculation of cross section area

$$A_{FE} = \sqrt{\frac{P}{f}} \quad cm^2, \quad f = 50 \quad Hz$$

A_{FE} - cross section area

P - requested transformer power

f - frequency

Insulations of toroidal cores

The toroidal cores can be insulated with a Mylar foil 1 x 70 %, 2 x 2/3, etc or coated with epoxy resin. In some cases we put it in a plastic housing.

All insulation materials are according to the UL94 V0 standard.

A typical polyester film (Mylar foil)is 50 microns thick and 5 or 10 mm wide .The UL file number is E93687.

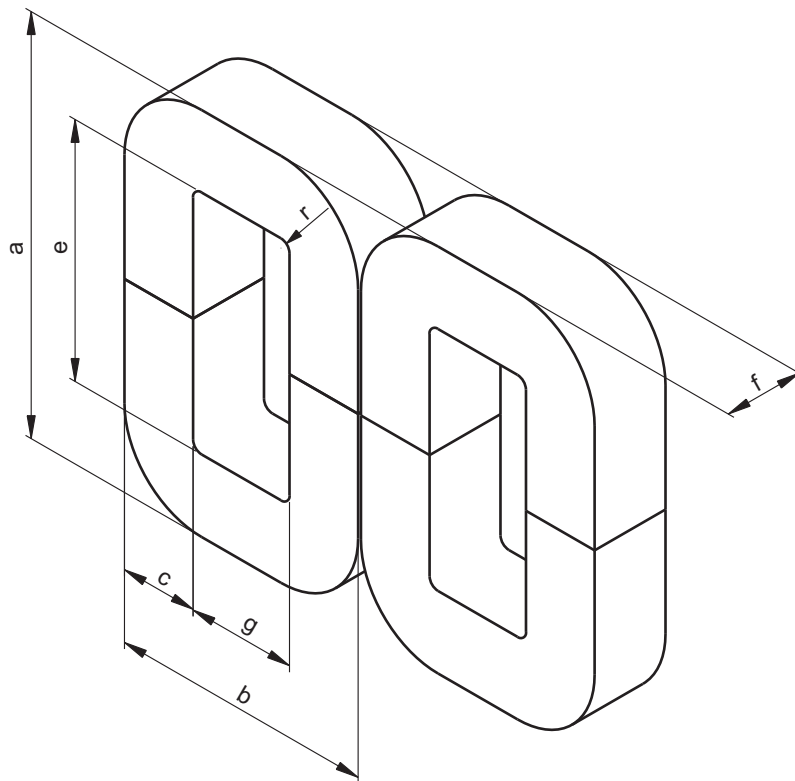
The cores can be coated with Resicoat EL-HLG03R (800702) epoxy resin. The UL file number is E214934.

CM and CE cores

CM and CE cores

CM and CE cores consist of four core halves (see drawing below). The coil former is on the middle leg. The transformer has horizontal or vertical holders. The horizontal holder and cores are wrapped with a clamp. Vertical holders of a core are fixed to the core with screws, washers and nuts .

Cut cores are mostly used for power transformers, chokes and special transformers. C cores are distributed according to the standard ,therefore they are listed under labels CM and CE cores.



CM and CE cores

CM cores

Number	Cores	a _{max} mm	b-1 pt mm	f mm	c mm	g _{min} mm	e _{min} mm	r _{max} mm	m _{Fe} kg	l _{Fe} cm	A _{Fe} cm ²	P _n VA
700121021000	CM42	43.6	21.8	15.2-0.7	6.0-0.8	9.5	31	1.5	0.054	9.8	0.72	5.3
700121031000	CM55	56.3	28.4	20.8-0.8	8.5-0.8	11.0	38.5	1.5	0.138	12.4	1.46	21.1
700121041000	CM65	65.6	33.2	27.0-0.8	9.9-0.9	13.0	45	1.5	0.250	14.6	2.24	45.7
700121051000	CM74	74.6	37.2	32.5-1.0	11.4-0.9	14.5	51	1.5	0.396	16.5	3.14	84
700121061000	CM85a	85.6	43.3	32.5-1.0	14.4-1.0	14.0	56	2.0	0.561	18.3	4.01	115
700121062000	CM85b	85.6	43.3	45.5-1.0	14.4-1.0	14.0	56	2.0	0.792	18.3	5.66	159
700121071000	CM102a	103.0	51.9	35.5-1.0	16.9-1.0	17.5	68	2.0	0.885	22.2	5.21	206
700121072000	CM102b	103.0	51.9	52.5-1.0	16.9-1.0	17.5	68	2.0	1.320	22.2	7.78	300

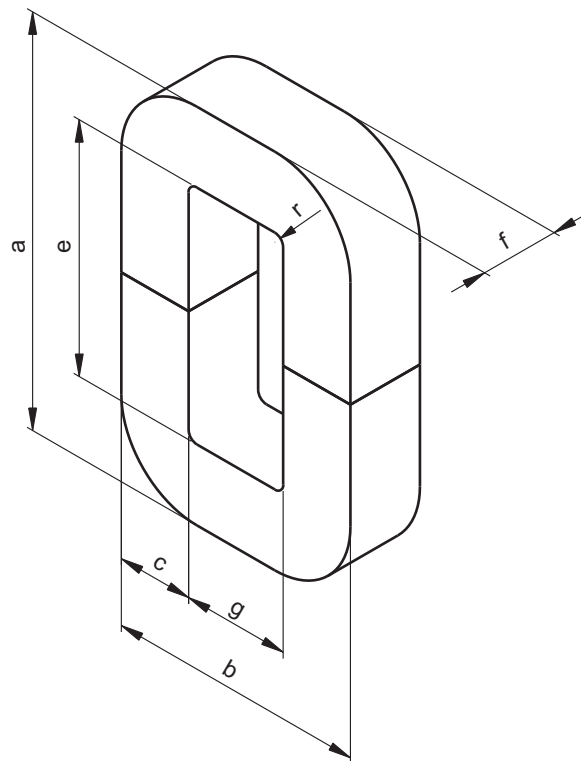
CE cores

Number	Cores	a _{max} mm	b-1 pt mm	f mm	c mm	g _{min} mm	e _{min} mm	r _{max} mm	m _{Fe} kg	l _{Fe} cm	A _{Fe} cm ²	P _n VA
	CE60	52.2	30.5	20.5-0.8	9.9-0.8	10.5	32	1.5	0.150	11.4	1.72	20.4
	CE66	57.2	33.5	22.5-0.8	10.9-0.8	11.5	35	1.5	0.138	12.4	1.46	30
	CE78	68.2	39.5	27.0-0.9	12.9-0.8	13.5	42	2.0	0.342	14.9	3.00	63
	CE84a	73.4	42.6	29.0-1.0	13.9-0.8	14.5	45	2.0	0.426	16.0	3.48	86
	CE84b	73.4	42.6	29.0-1.0	13.9-0.8	14.5	45	2.0	0.640	16.0	5.23	125
	CE92a	77.6	46.2	24.0-1.0	11.4-0.8	23.0	54	2.0	0.332	18.7	2.32	96
	CE92b	77.6	46.2	33.0-1.0	11.4-0.8	23.0	54	2.0	0.461	18.7	3.22	131
	CE106a	88.6	53.2	33.0-1.0	14.4-0.8	24.0	59	2.0	0.660	20.9	4.13	198
700122062000	CE106b	88.6	53.2	46.0-1.0	14.4-0.8	24.0	59	2.0	0.929	20.9	5.81	270
700123011000	CE130a	108.8	65.3	37.2-1.2	17.4-0.9	30.0	73	2.0	1.12	25.9	5.64	387
700123012000	CE130b	108.8	65.3	47.2-1.2	17.4-0.9	30.0	73	2.0	1.43	25.9	7.21	484
700123021000	CE150a	123.8	75.2	41.2-1.2	19.8-0.9	35.0	83	2.0	1.63	29.7	7.18	590
700123022000	CE150b	123.8	75.2	51.2-1.2	19.8-0.9	35.0	83	2.0	2.04	29.7	8.98	720
700123023000	CE150c	123.8	75.2	61.2-1.2	19.8-0.9	35.0	83	2.0	2.45	29.7	10.8	860
700123031000	CE170a	145.8	85.0	56.0-1.5	22.1-1.1	40.0	100	3.0	2.92	34.7	11.0	1130
700123032000	CE170b	145.8	85.0	66.0-1.5	22.1-1.1	40.0	100	3.0	3.42	34.7	12.9	1308
700123033000	CE170c	145.8	85.0	76.0-1.5	22.1-1.1	40.0	100	3.0	3.96	34.7	14.9	1490
700123041000	CE195a	186.8	98.2	57.0-1.5	27.3-1.1	42.5	130	3.0	4.53	42.9	13.8	1890
700123043000	CE195c	186.8	98.2	85.0-1.5	27.3-1.1	42.5	130	3.0	6.83	42.9	20.8	2690
700123051000	CE231a	216.0	116.1	63.0-1.5	32.1-1.3	50.5	149	3.0	6.87	49.9	18.0	3000
700123052000	CE231b	216.0	116.1	79.0-1.5	32.1-1.3	50.5	149	3.0	8.67	49.9	22.7	3710
700123053000	CE231c	216.0	116.1	98.0-1.5	32.1-1.3	50.5	149	3.0	10.77	49.9	28.2	4400

CU cores

CU cores

CU cores consist of two core halves (see drawing below). The coil formers are on both legs. Horizontal holders are tight to cores by a clamp.



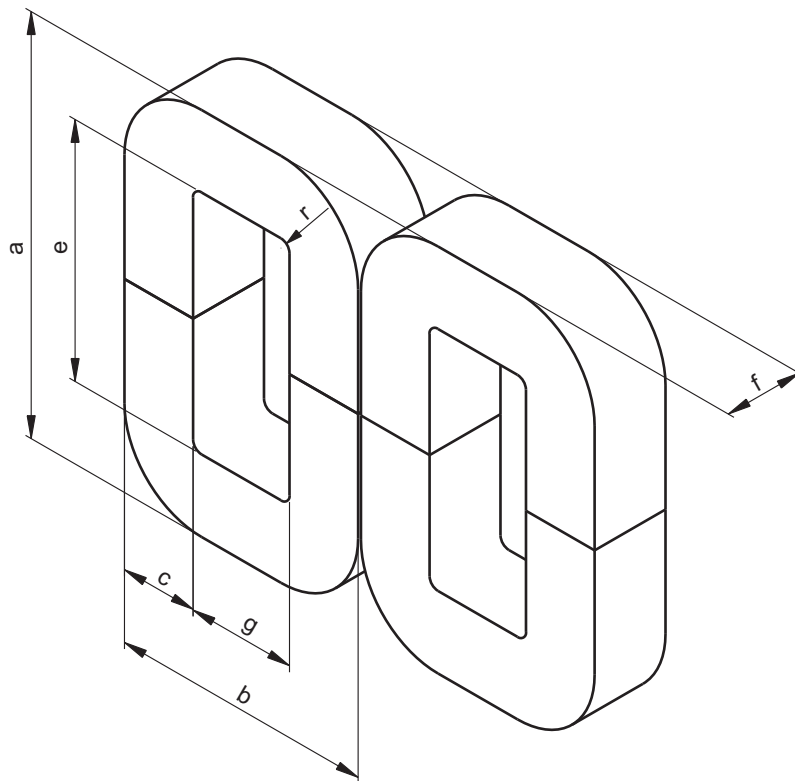
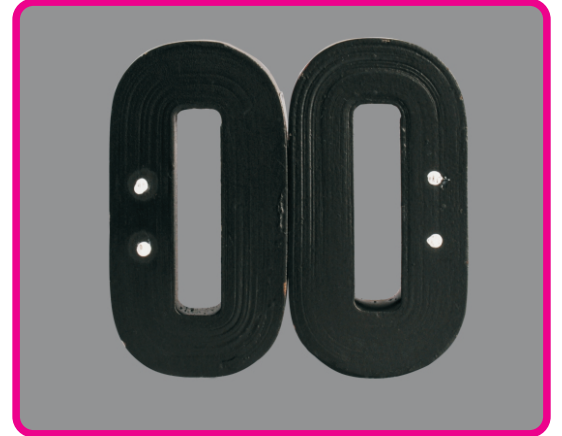
CU cores

CU cores												
Number	Cores	a _{max} mm	b-1 pt mm	f mm	c mm	g _{min} mm	e _{min} mm	r _{max} mm	m _{Fe} kg	l _{Fe} cm	A _{Fe} cm ²	P _n VA
	CU15a	28.7	15	5.4-0.4	4.9-0.5	5	18.5	1.5	0.010	6.1	0.21	
	CU15b	28.7	15	8.4-0.4	4.9-0.5	5	18.5	1.5	0.015	6.1	0.33	
	CU24a	42.7	24	8.5-0.5	7.9-0.6	8	26.5	1.5	0.042	9.2	0.59	
	CU24b	42.7	24	13.5-0.5	7.9-0.6	8	26.5	1.5	0.066	9.2	0.94	
700124011000	CU30a	52.7	30	10.1-0.6	9.9-0.8	10	32.5	1.5	0.072	11.4	0.82	3.3
700124012000	CU30b	52.7	30	16.1-0.6	9.9-0.8	10	32.5	1.5	0.117	11.4	1.34	6.3
700124021000	CU39a	67.9	39.1	13.4-0.9	12.9-0.8	13	41.5	1.5	0.163	14.8	1.44	12.4
700124022000	CU39b	67.9	39.1	20.4-0.9	12.9-0.8	13	41.5	1.5	0.254	14.8	2.24	20
700124031000	CU48a	82.9	48	16.5-1.0	15.8-0.9	16	50.5	1.5	0.303	18.1	2.19	30.5
700124032000	CU48b	82.9	48	25.5-1.0	15.8-0.9	16	50.5	1.5	0.480	18.1	3.47	48.6
700124041000	CU60a	103.6	60.1	20.6-1.1	19.8-0.9	20	63	2.0	0.605	22.6	3.50	82
700124042000	CU60b	103.6	60.1	30.6-1.1	19.8-0.9	20	63	2.0	0.915	22.6	5.30	122
700124051000	CU75a	128.6	75	26.1-1.1	24.7-1.0	25	78	2.0	1.22	28.2	5.63	200
700124052000	CU75b	128.6	75	41.1-1.1	24.7-1.0	25	78	2.0	1.94	28.2	9.01	306
700124061000	CU90a	155.8	90	30.9-1.4	29.6-1.1	30	95	3.0	2.08	34	7.99	387
700124062000	CU90b	155.8	90	50.9-1.4	29.6-1.1	30	95	3.0	3.49	34	13.4	630
700124071000	CU102a	175.4	102.4	35.4-1.4	33.7-1.2	34	106	3.0	3.08	38.4	10.5	620
700124072000	CU102b	175.4	102.4	56.4-1.4	33.7-1.2	34	106	3.0	4.99	38.4	17.0	960
700124081000	CU114a	195.6	114.4	39.2-1.7	37.6-1.3	38	118	3.0	4.23	42.8	12.9	920
700124082000	CU114b	195.6	114.4	63.2-1.7	37.6-1.3	38	118	3.0	6.96	42.8	21.2	1440
700124091000	CU132a	225.4	132.1	45.2-1.7	43.4-1.4	44	136	3.0	6.59	49.5	17.4	1580
700124092000	CU132b	225.4	132.1	71.2-1.7	43.4-1.4	44	136	3.0	10.49	49.5	27.7	2370
700124101000	CU150a	255.6	150.2	51.2-1.7	49.4-1.5	50	154	3.0	9.67	56.2	22.5	2370
700124102000	CU150b	255.6	150.2	76.2-1.7	49.4-1.5	50	154	3.0	14.58	56.2	33.9	3380
700124111000	CU168a	286.0	168.3	57.0-2.0	55.3-1.6	56	172	3.0	13.54	63.0	28.1	3620
700124112000	CU168b	286.0	168.3	91.0-2.0	55.3-1.6	56	172	3.0	21.88	63.0	45.4	5400
700124121000	CU180a	307.2	181.3	62.0-2.0	59.7-1.8	60	184	3.0	17.08	67.6	33.0	4560
700124122000	CU180b	307.2	181.3	77.0-2.0	59.7-1.8	60	184	3.0	21.36	67.6	41.3	5500
700124123000	CU180c	307.2	181.3	92.0-2.0	59.7-1.8	60	184	3.0	25.60	67.6	49.5	6400
700124131000	CU210a	357.2	211.2	71.7-2.2	69.6-2.0	70	214	3.0	26.85	78.7	44.6	7800
700124132000	CU210b	357.2	211.2	101.7-2.2	69.6-2.0	70	214	3.0	38.47	78.7	63.9	10500
700124133000	CU210c	357.2	211.2	131.7-2.2	69.6-2.0	70	214	3.0	50.09	78.7	83.2	12900

CG cores

CG cores

CG cores consist of four core halves (see drawing below). The coil formers are on both middle legs. There are horizontal and vertical holders. The horizontal holders are fixed to cores with one or two clamps. The vertical holders are fixed to the core by screws, washers and nuts.



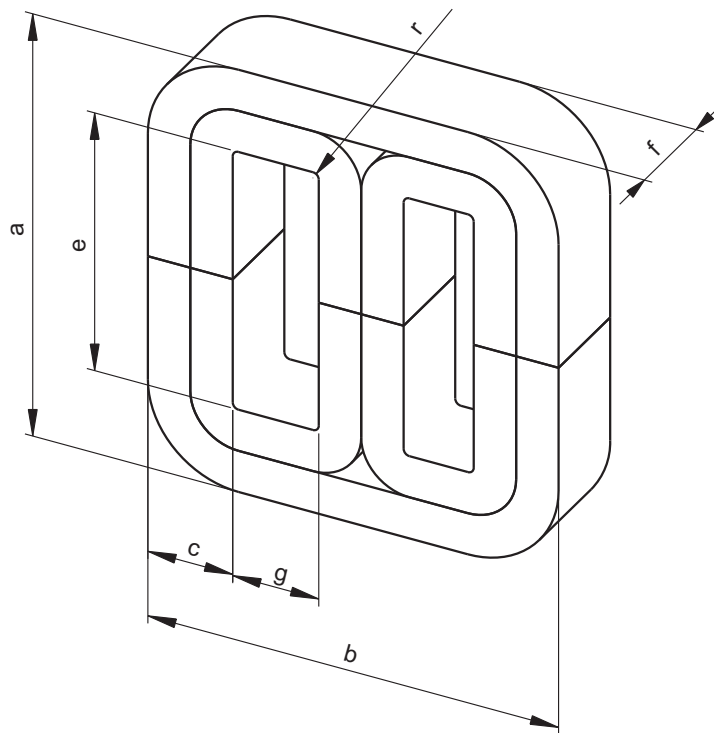
CG cores

CG cores												
Number	Cores	a _{max} mm	b-1 pt mm	f mm	c mm	g _{min} mm	e _{min} mm	r _{max} mm	m _{Fe} kg	l _{Fe1} cm	A _{Fe} cm ²	P _n VA
700125011000	CG27/6	29.4	21.0	7.2	7.2-0.8	6.4	14.3	1.0	0.018	6.3	0.37	
700125021000	CG33/8	35.7	25.8	8.7	8.7-0.8	7.9	17.5	1.0	0.035	7.8	0.58	
700125031000	CG41/9	43.7	30.6	10.3	10.3-0.8	9.5	22.2	1.0	0.063	9.5	0.86	
700125041000	CG48/9	50.0	32.1	10.3	10.3-0.8	11.1	28.6	1.0	0.074	11.1	0.86	
700125051000	CG54/13	56.4	30.6	13.5	8.7-0.8	12.7	38.1	1.5	0.094	12.8	0.96	16
700125052000	CG54/19	56.4	30.6	19.8	8.7-0.8	12.7	38.1	1.5	0.141	12.8	1.44	25
700125053000	CG54/25	56.4	30.6	26.2	8.7-0.8	12.7	38.1	1.5	0.187	12.8	1.92	34
700125054000	CG54/38	56.4	30.6	38.9	8.7-0.8	12.7	38.1	1.5	0.281	12.8	2.88	50
700125061000	CG70/13	73.0	36.9	13.5	10.3-0.8	15.9	50.8	1.5	0.145	16.5	1.15	33
700125062000	CG70/13	73.0	36.9	19.8	10.3-0.8	15.9	50.8	1.5	0.218	16.5	1.17	51
700125063000	CG70/25	73.0	36.9	26.2	10.3-0.8	15.9	50.8	1.5	0.291	16.5	2.30	68
700125064000	CG70/32	73.0	36.9	32.5	10.3-0.8	15.9	50.8	1.5	0.363	16.5	2.87	84
700125071000	CG76/19	79.4	40.1	19.8	10.3-0.8	19.0	57.2	3.0	0.239	18.1	1.72	65
700125072000	CG76/25	79.4	40.1	26.2	10.3-0.8	19.0	57.2	3.0	0.319	18.1	2.30	87
700125073000	CG76/32	79.4	40.1	32.5	10.3-0.8	19.0	57.2	3.0	0.398	18.1	2.87	108
700125074000	CG76/38	79.4	40.1	38.9	10.3-0.8	19.0	57.2	3.0	0.478	18.1	3.45	128
700125081000	CG89/22	92.1	49.6	23.0	13.5-0.8	22.2	63.5	3.0	0.432	21.1	2.68	131
700125082000	CG89/29	92.1	49.6	29.4	13.5-0.8	22.2	63.5	3.0	0.553	21.1	3.45	168
700125083000	CG89/38	92.1	49.6	38.9	13.5-0.8	22.2	63.5	3.0	0.739	21.1	4.60	219
700125084000	CG89/51	92.1	49.6	51.6	13.5-0.8	22.2	63.5	3.0	0.989	21.1	6.13	286
700125091000	CG108/19	111.1	62.3	19.8	16.7-0.8	28.6	76.2	3.0	0.567	25.9	2.87	206
700125092000	CG108/29	111.1	62.3	29.4	16.7-0.8	28.6	76.2	3.0	0.898	25.9	4.54	319
700125093000	CG108/38	111.1	62.3	38.9	16.7-0.8	28.6	76.2	3.0	1.14	25.9	5.75	400
700125094000	CG108/51	111.1	62.3	51.6	16.7-0.8	28.6	76.2	3.0	1.52	25.9	7.66	520
700125101000	CG127/25	130.2	75.0	26.2	19.8-0.8	34.9	88.9	3.0	1.08	30.7	4.60	430
700125102000	CG127/38	130.2	75.0	38.9	19.8-0.8	34.9	88.9	3.0	1.62	30.7	6.90	630
700125103000	CG127/51	130.2	75.0	51.6	19.8-0.8	34.9	88.9	3.0	2.16	30.7	9.23	800
700125104000	CG127/70	130.2	75.0	71.4	19.8-0.8	34.9	88.9	3.0	2.97	30.7	12.70	1090
700125108000	CG165/32	169.9	97.2	32.5	26.2-0.8	44.4	114.3	3.0	2.36	40.2	7.68	1060
700125109000	CG165/51	169.9	97.2	51.5	26.2-0.8	44.4	114.3	3.0	3.77	40.2	12.30	1620

C3U cores

C3U cores

C3U cores consist of two core halves (see drawing below). The coil formers are on all three legs. Horizontal holders are tight to cores by two clamps.



C3U cores

C3U cores

Number	Cores	a _{max} mm	b-1 pt mm	f mm	c mm	g _{min} mm	e _{min} mm	r _{max} mm	m _{Fe} kg	I _{Fe1} cm	I _{Fe2} cm	A _{Fe} cm ²	P _n VA
700126021000	C3U39a	68.9	66	13.4-0.9	12.9-0.8	13	41.5	1.5	0.261	12.7	22.1	1.43	17.7
700126022000	C3U39b	68.9	66	20.4-0.9	12.9-0.8	13	41.5	1.5	0.407	12.7	22.1	2.24	27.9
700126031000	C3U48a	83.9	80.8	16.6-1.0	15.8-0.9	16	50.5	1.5	0.491	15.5	27.2	2.20	44.1
700126032000	C3U48b	83.9	80.8	25.6-1.0	15.8-0.9	16	50.5	1.5	0.776	15.5	27.2	3.49	68
700126041000	C3U60a	104.6	100.9	20.6-1.1	19.8-0.9	20	63	2.0	0.945	19.4	33.9	3.51	118
700126042000	C3U60b	104.6	100.9	30.6-1.1	19.8-0.9	20	63	2.0	1.47	19.4	33.9	5.30	172
700126051000	C3U75a	129.7	125.7	26.1-1.1	24.7-1.0	25	78	2.0	1.82	24.1	42.2	5.63	287
700126052000	C3U75b	129.7	125.7	41.1-1.1	24.7-1.0	25	78	2.0	2.93	24.1	42.2	9.01	432
700126061000	C3U90a	156.8	150.6	30.9-1.4	29.6-1.1	30	95	3.0	3.33	29.1	50.8	7.99	550
700126062000	C3U90b	156.8	150.6	50.9-1.4	29.6-1.1	30	95	3.0	5.59	29.1	50.8	13.4	840
700126071000	C3U102a	176.4	171.1	35.4-1.4	33.7-1.2	34	106	3.0	4.94	32.8	57.5	10.5	850
700126072000	C3U102b	176.4	171.1	56.4-1.4	33.7-1.2	34	106	3.0	8.00	32.8	57.5	17.0	1270
700126081000	C3U114a	196.2	191	39.2-1.7	37.6-1.3	38	118	3.0	6.79	36.6	64.2	12.9	1280
700126082000	C3U114b	196.2	191	63.2-1.7	37.6-1.3	38	118	3.0	11.14	36.6	64.2	21.2	1910
700126091000	C3U132a	226.4	220.5	45.2-1.7	43.4-1.4	44	136	3.0	10.54	42.3	74.2	17.4	2170
700126092000	C3U132b	226.4	220.5	71.2-1.7	43.4-1.4	44	136	3.0	16.84	42.3	74.2	27.7	3090
700126101000	C3U150a	255.6	249.6	51.2-1.7	49.4-1.5	50	154	3.0	15.53	48	84.3	22.5	3100
700126102000	C3U150b	255.6	249.6	76.2-1.7	49.4-1.5	50	154	3.0	23.38	48	84.3	33.9	4310
700126111000	C3U168a	286.0	279.6	57.0-2.0	55.3-1.6	56	172	3.0	21.68	53.8	94.4	28.1	4780
700126112000	C3U168b	286.0	279.6	91.0-2.0	55.3-1.6	56	172	3.0	35.07	53.8	94.4	45.4	6770
700126121000	C3U180a	307.0	301.0	62.0-2.0	59.7-1.8	60	184	3.0	27.38	57.7	101.5	33.0	6000
700126122000	C3U180b	307.0	301.0	77.0-2.0	59.7-1.8	60	184	3.0	34.23	57.7	101.5	41.3	7100
700126123000	C3U180c	307.0	301.0	92.0-2.2	59.7-1.8	60	184	3.0	41.07	57.7	101.5	49.5	8000
700126131000	C3U210a	357.2	350.8	71.7-2.2	69.6-2.0	70	214	3.0	43.12	67.2	118.2	44.6	10100
700126132000	C3U210b	357.2	350.8	101.7-2.2	69.6-2.0	70	214	3.0	61.74	67.2	118.2	63.9	12600
700126133000	C3U210c	357.2	350.8	131.7-2.2	69.6-2.0	70	214	3.0	80.35	67.2	118.2	82.3	15100

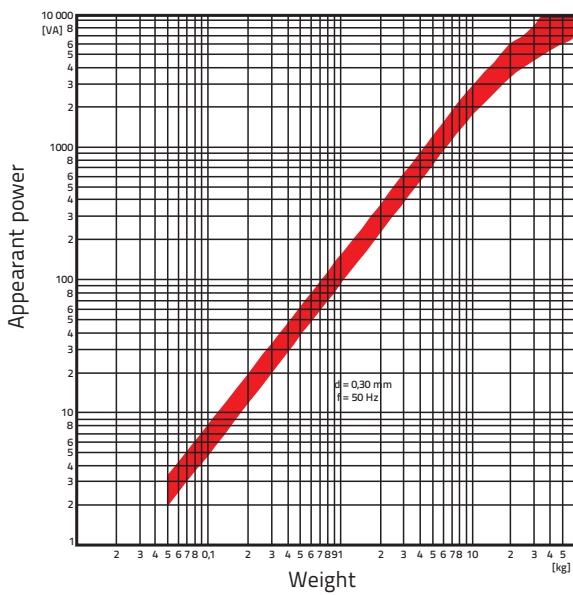
Materials: GOESS

GOESS - grain oriented silicon iron steel strip

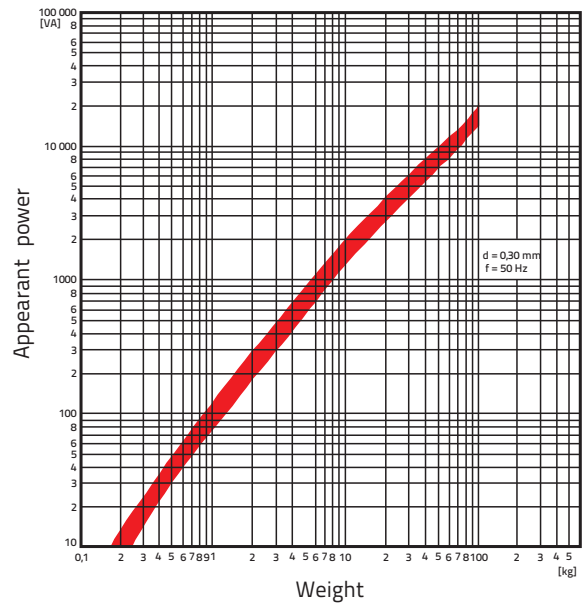
Type of GOESS materials

Common description	Description in acc. with DIN 46400	Old label	Newlabel in acc. with EN10107	Loss in magnetization	Thickness mm	Loss of W/kg	
						1.5 T	1.7 T
M0	-	27M0H	M103-27P	low	0.27		1.03
M0	-	30M0H	M105-30P	low	0.3		1.05
M1	VM111-30P	30M1H	M111-30P	low	0.3		1.11
M2	VM117-30P	30M2H	M117-30P	low	0.3		1.17
	-	-	M120-23S	decreas	0.23	0.77	1.2
M3	VM130-27S	27M3	M130-27S	decreas	0.27	0.85	1.3
M3	-	23M3	M080-23N	normal	0.23	0.8	1.27
M4	VM89-27N	27M4	M089-27N	normal	0.27	0.89	1.4
M5	VM97-30N	30M5	M097-30N	normal	0.3	0.97	1.5
M6	VM111-35N	35M6	M111-35N	normal	0.35	1.11	1.65
	VM140-30S	-	M140-30S	decreas	0.3	0.92	1.4
	VM155-35S	-	M155-35S	decreas	0.35	1.05	1.55
M7	-	50M7	M175-50N	normal	0.5	1.75	
95H23			M100-23P	low	0.23		0.95
Trafoperm N2		G010	N2		0.1	1.1	

Appearant power of single phase core



Appearant power of three phase core



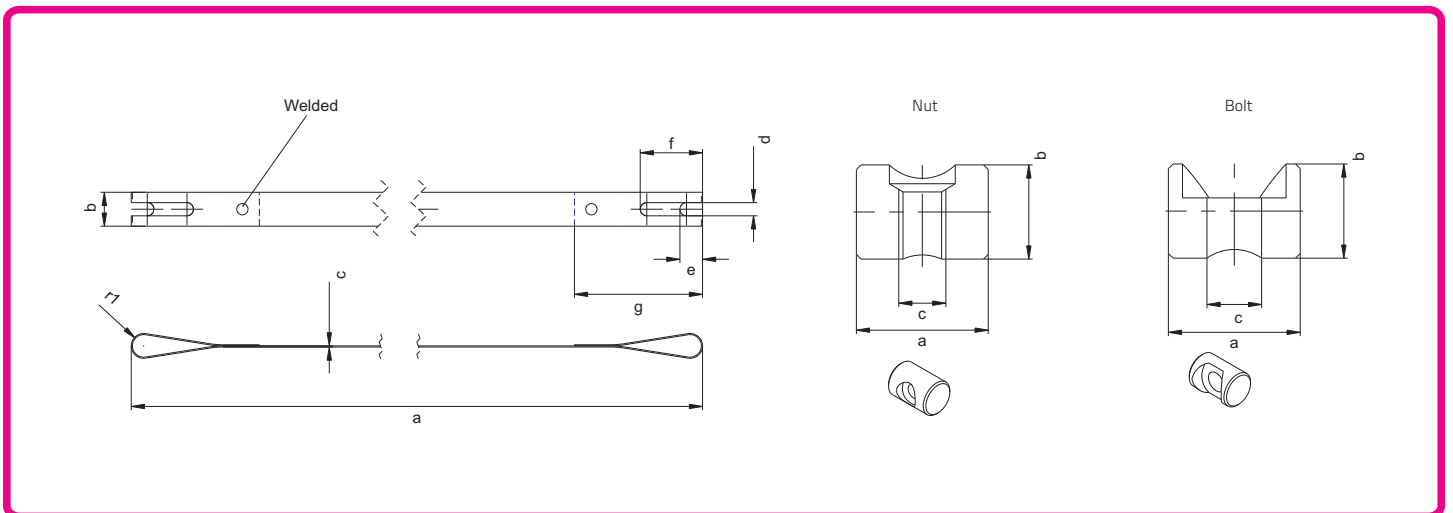
Accessories

Toroidal cores

- Rubber washer
- Tinned round plate

CM, CE, CU, CG and C3U standard cores are provided with following accessories:

- Clamps
- Cartoon washer
- Plastic coilformers
- Vertical and horizontal holders



Accessories

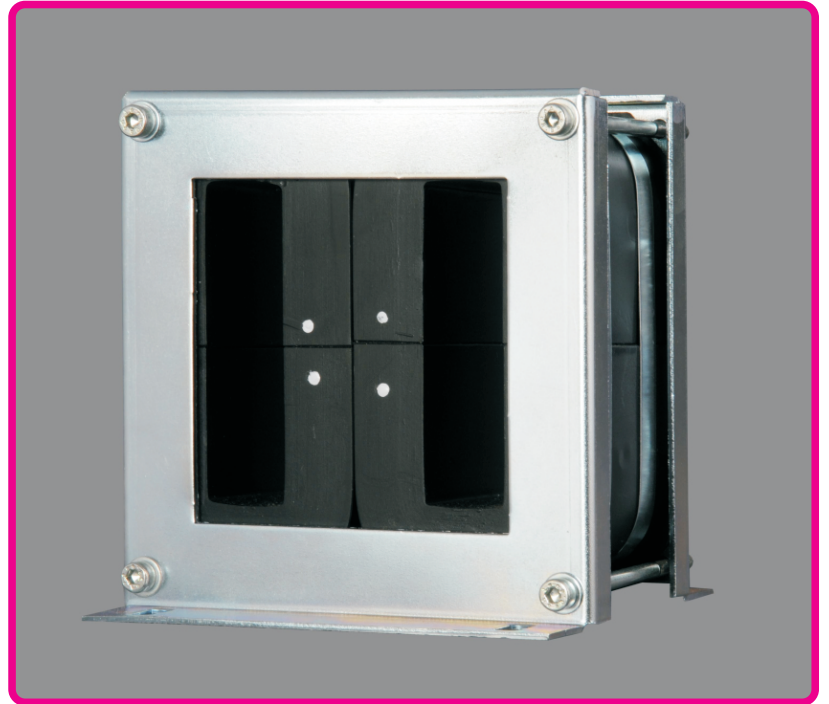
Clamp, bolt and nut

Clamps	Code	a	b	c	d	e	f	r1	Bolt			Nut			Screw DIN84
									a	b	c	a	b	c	
CM42	732501021000	116	7	0.3	2.5	4	12.5	2.5	7	5	2.8	7	5	M2.5	M2.5x16
CM55	732501031000	147	7	0.3	2.5	4	12.5	2.5	7	5	2.8	7	5	M2.5	M2.5x18
CM65	732501041000	173	7	0.3	2.5	4	12.5	2.5	7	5	2.8	7	5	M2.5	M2.5x20
CM74	732501051000	196	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x25
CM85	732501061000	222	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CM102	732501071000	269	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CE92	732503051000	119	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CE106	732503061000	246	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CE130	732503071000	305	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CE150	732503081000	350	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CE170	732503091000	405	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CU30	732504011000	140	7	0.3	2.5	4	12.5	2.5	7	5	2.8	7	5	M2.5	M2.5x18
CU39	732504021000	182	7	0.3	2.5	4	12.5	2.5	7	5	2.8	7	5	M2.5	M2.5x20
CU48	732504031000	221	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CU60	732504041000	281	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CU75	732504051000	351	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
CU90	732504061000	427	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
CU102	732504071000	481	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
CU114	732504081000	538	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
CU132	732504091000	620	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
CU150	732504101000	705	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
CU168	732504111000	780	15	0.6	5.5	12	37	5	15	10	5.3	15	10	M5	M5x35
CU180	732504121000	850	15	0.4	5.5	12	37	4	15	10	5.3	15	10	M5	M5x50
CU210	732504131000	998	15	0.4	5.5	12	37	4	15	10	5.3	15	10	M5	M5x50
CG127/51	732505101000	355	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
C3U39	732504021000	238	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
C3U48	732506031000	285	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
C3U60	732506041000	363	9	0.3	3.5	6	16.5	3	9	6	3.3	9	6	M3	M3x30
C3U75	732506051000	446	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
C3U90	732506061000	545	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x35
C3U102	732506071000	617	12	0.4	4.5	9	21	4	12	8	4.3	12	8	M4	M4x40
C3U114	732506081000	691	14	0.5	5.5	12	37	5	15	10	5.3	15	10	M5	M5x45
C3U132	732506092000	800	14	0.5	5.5	12	37	5	15	10	5.3	15	10	M5	M5x45
C3U150	732506101000	910	15	0.5	5.5	12	37	5	15	10	5.3	15	10	M5	M5x45
C3U168	732506111000	1000	15	0.5	5.5	12	37	5	15	10	5.3	15	10	M5	M5x45
C3U180	732506121000	1075	15	0.5	5.5	12	37	5	15	10	5.3	15	10	M5	M5x45
C3U210	732506131000	1270	15	0.5	5.5	12	37	5	15	10	5.3	15	10	M5	M5x45

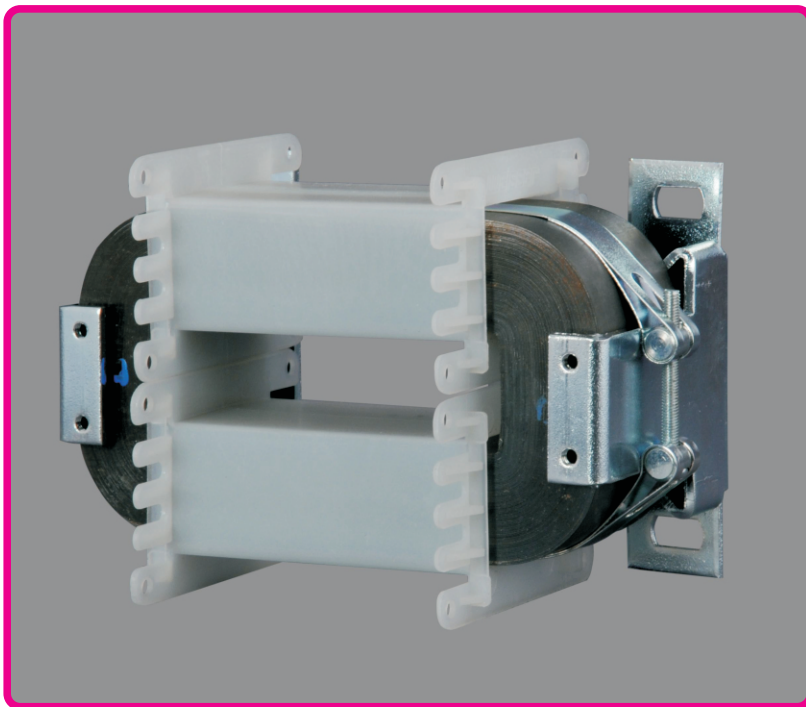
Remarks: • A set of clamps consist of clamps, a bolt, a nut and a screw .
• All **Type b** cores are supplied with two sets of clamps .

Accessories

Core with holder - CM102a

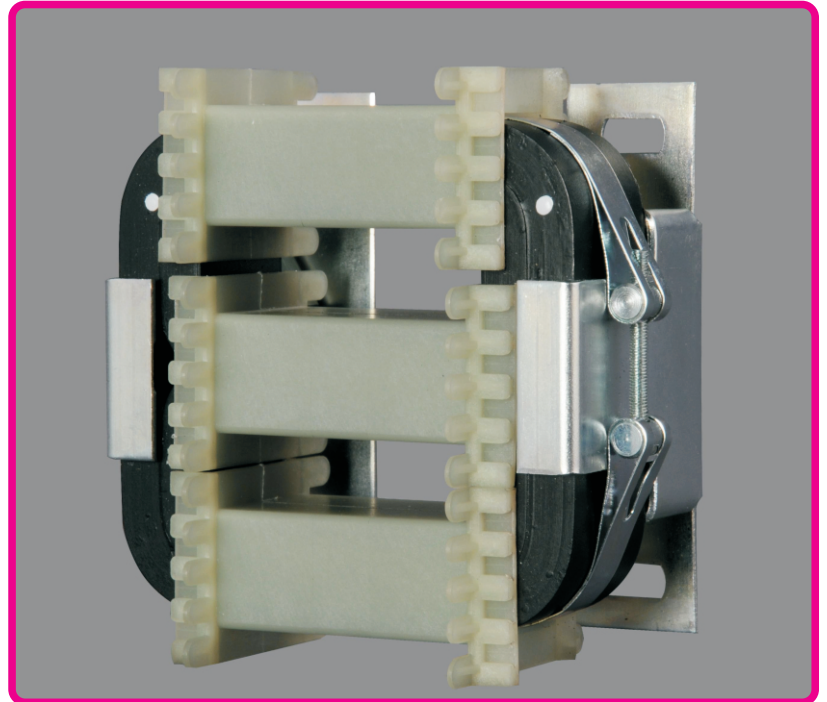


Core with holder - CU60b



Accessories, Measurements

Core with holder - C3U60a



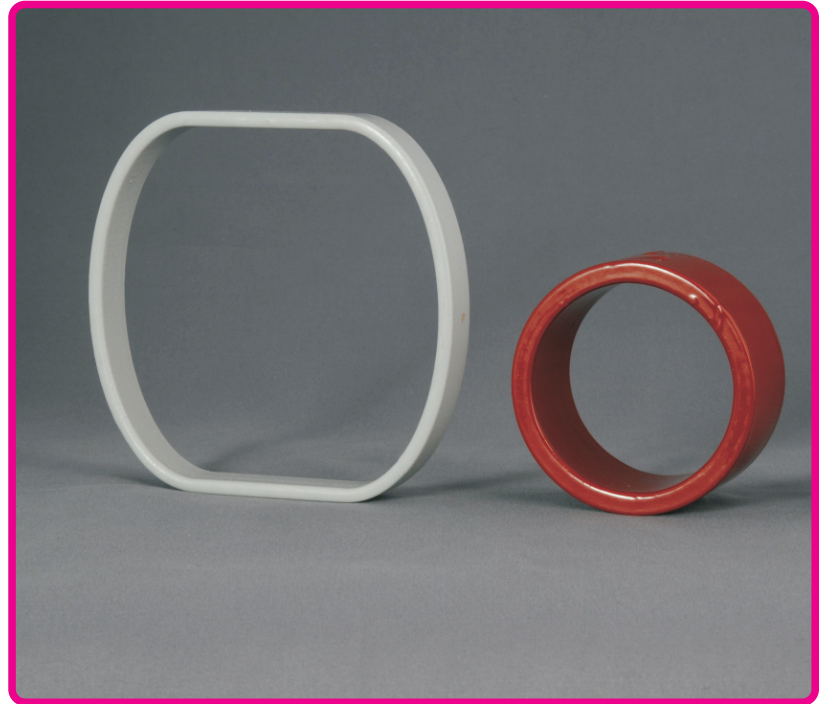
MDK1000A computer controlled measurement system



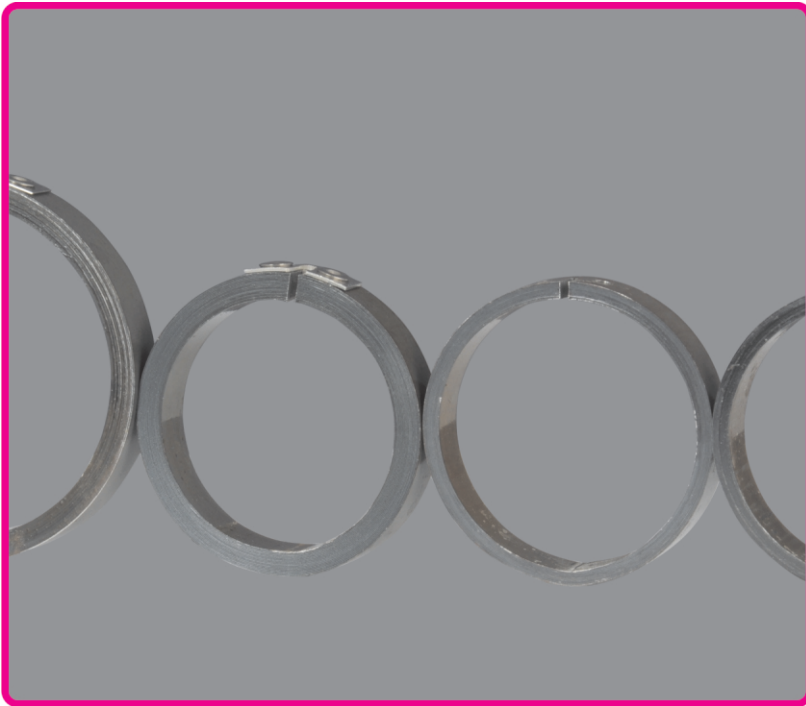
The electromagnetic properties of cores are measured by an MDK1000A computer controlled measurement system. A BH curve, current and voltage shapes and their RMS values are displayed. The cores are measured in one, two or three points or by scanning. All parameters are memorized on a hard disk. The table below the diagrams shows electromagnetic values in numbers. A customer can get these results in a PDF form by E-mail.

Special cores

Coated oval cores



Toroidal cores with an air gap

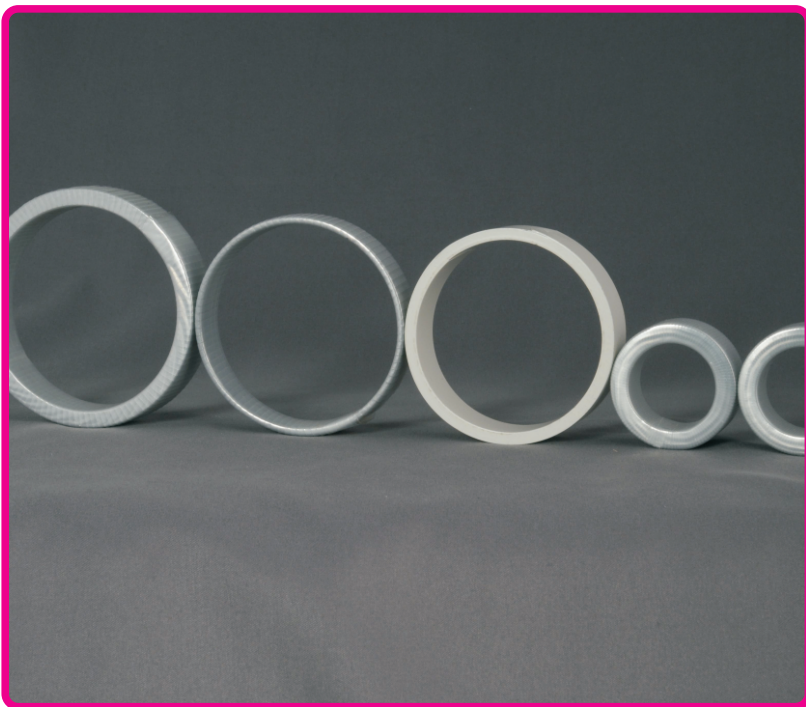


Special cores

Rectangular cores



Toroidal cores with Mylar insulation





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